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In the Supreme Court of the United States

ABIGAIL NOEL FISHER,
Petitioner,

v.

UNIVERSITY OF TEXAS AT AUSTIN, *et al.*,
Respondents.

On Writ of Certiorari to the United States Court of Appeals for the Fifth Circuit

BRIEF OF EXPERIMENTAL PSYCHOLOGISTS AS *AMICI CURIAE* IN SUPPORT OF RESPONDENTS

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QUESTION PRESENTED

Whether the Fifth Circuit's re-endorsement of the University of Texas at Austin's use of racial preferences in undergraduate admissions decisions can be sustained under this Court's decisions interpreting the Equal Protection Clause of the Fourteenth Amendment, including *Fisher v. University of Texas at Austin*, 133 S. Ct. 2411 (2013).

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INTEREST OF *AMICI CURIAE*

Amici curiae, listed below, are experimental social psychologists and other social scientists who study stereotype threat and related phenomena. Their research bears directly on the questions of (1) how to design a college admissions policy to admit the students with the greatest academic potential, and (2) how to ensure that those students will perform up to their capacities. They file this brief in order to acquaint the Court with this research and to explain its relevance to the significance of diversity within classrooms as well as at the university more generally.[1]

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[1] The parties have filed blanket consents to the filing of amicus briefs. No counsel for any party authored this brief in whole or in part, and no person or entity other than *amici* and their counsel made a monetary contribution intended to fund the preparation or submission of this brief. *Amici* file this brief as individuals and not on behalf of the institutions with which they are affiliated.

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SUMMARY OF ARGUMENT

This Court has long recognized that a university's freedom to pursue an academic atmosphere "'conducive to speculation, experiment, and creation,'" extends to the question of "'who may be admitted to study.'" *Regents of the University of California v. Bakke*, 438 U.S. 265, 312 (1978) (quoting *Sweezy v. New Hampshire*, 354 U. S. 234, 263 (1957) (Frankfurter, J., concurring)). In its initial decision in *Fisher v. University of Texas*, the Court affirmed that diversity in higher education serves a compelling interest because such diversity produces "enhanced classroom dialogue and the lessening of racial isolation and stereotypes." 133 S. Ct. 2411, 2418 (2013).

Petitioner's core argument is that the Texas legislature's Top Ten Percent Plan, which fills 60 to 80% of each incoming freshman class at the University of Texas by automatically granting admission to Texas students who graduate in the top ten percent of their high school classes, adequately achieves the educational benefits of diversity. The Fifth Circuit on remand from this Court rejected this argument, finding that the reliance upon a sole measure – class rank – falls short of the broad and complex diversity celebrated by Justice Powell in his concurrence in *Bakke*.

To supplement the Top Ten Percent Plan, the University of Texas admits students with exceptionally high Academic Index ("AI") scores, calculated based on an applicant's standardized test scores, class rank, and high school coursework, or through a holistic review which considers applicants' AI scores and Personal Achievement Index ("PAI") scores.

The PAI is calculated from (i) the weighted average score received for each of two required essays and (ii) a personal achievement score based on a holistic review of the entire application, including demonstrated leadership qualities, extracurricular activities, honors and awards, essays, work experience, community service, and special circumstances, such as the applicant's socioeconomic status, family composition, special family responsibilities, the socioeconomic status of the applicant's high school, and race.

The issue now before this Court is whether the University of Texas's supplemental holistic admissions program is narrowly tailored to meet diversity goals.

It is the view of *amici* that admissions that are allowed to consider every factor except race not only undermine diversity goals but also mismeasure the true merits of minority candidates. A substantial body of research by social scientists has revealed that standardized test scores and grades often underestimate the true academic capacity of members of certain minority groups. This result is attributable to a phenomenon scientists call *stereotype threat*.

Stereotype threat is the pressure that people feel when they fear that their performance could confirm a negative stereotype about their group. This pressure manifests itself in anxiety and distraction that interferes with intellectual functioning. A student need not believe the stereotype is accurate to be affected. He or she need only be aware of the stereotype and care about performing well.

Stereotype threat has been one of the most extensively studied topics in social psychology over the

past two decades. In hundreds of studies, scientists have confirmed the existence of stereotype threat and have measured its magnitude, both in laboratory experiments and in the real world. Because of stereotype threat, standard assessments of academic performance underestimate the ability of students targeted by negative stereotypes by an average of 0.18 standard deviations, the equivalent of 63 points on the SAT.

These findings have three important implications for college admissions.

First, because of stereotype threat, standardized test scores and high school GPAs systematically underestimate the true talents of many members of minority groups stigmatized as intellectually inferior. This means that the most promising students are not always the ones with the best numbers. A genuine merit-based admission policy therefore cannot rely on these numbers alone. An admissions policy that takes proper account of stereotype threat is not a *departure* from merit-based admissions, but is rather an effort to achieve *more accurate* merit-based admissions.

Second, stereotype threat in college depresses the grades of many minority students. The more stereotype threat experienced by a student in an academic setting, the worse the student's grades. One way of mitigating stereotype threat is to provide a racially diverse environment, so that minority students do not feel that they are seen or evaluated as representatives of their group.

Third, research on *latent capacity* establishes that in contexts in which stereotype threat is reduced,

students from minority groups subject to threat show dramatic improvements in performance. These findings are relevant to Justice Thomas's concern that black and Latino students will be unable to succeed in selective universities such as the University of Texas because of the gap between their entering test scores and grades. *Fisher*, 133 S. Ct. 2411, 2430–32 (Thomas, J., concurring).

The exhaustive research on stereotype threat speaks directly to the question of whether a college may find it necessary to include race as a factor in a holistic admissions plan to achieve the compelling educational goals of admitting the best students from all races and ethnicities and ensuring that all students can perform to their potential.

ARGUMENT

Following this Court's remand of this case, the Fifth Circuit rejected the argument that the University of Texas should be required to rely solely upon the Top Ten Percent Plan for admissions of minority students – or all students. It explained that, in ignoring every other factor besides class rank, the Top Ten Percent Plan created "significant costs to diversity and academic integrity, passing over large numbers of highly qualified minority and non-minority applicants." *Fisher v. University of Texas at Austin*, No. 09-50822 (5th Cir. July 15, 2014). This Court in *Grutter v. Bollinger*, commenting upon similar programs, recognized "even assuming such plans are race-neutral, they may preclude the university from conducting the individualized assessments necessary to assemble a student body that is not just racially

diverse, but diverse along all the qualities valued by the university." 539 U.S. 306, 340 (2003).

The primary issue before this Court is whether the University of Texas's consideration of race as one of many factors in its holistic review process is narrowly tailored to meet diversity goals.

It is the view of *amici* that admissions criteria that include every factor except race not only undermine diversity goals but also mismeasure the true merits of minority candidates. A substantial body of research by social scientists has revealed that standardized test scores and grades often underestimate the true academic capacity of members of certain minority groups. This result is attributable to a phenomenon scientists call *stereotype threat*.

Stereotype threat describes a specific, well-documented, and widespread psychological phenomenon: When people are aware that their performance could confirm a negative stereotype about a group to which they belong, they experience anxiety and distraction that interfere with their intellectual functioning. If one belongs to a gender, ethnic, or racial group that is viewed as intellectually inferior, a challenging academic task can trigger this particular form of anxiety, which prevents a student from performing as well as he or she is able. The student need not believe that the stereotype is accurate to be affected. The student only needs to be aware that the stereotype exists and to care about performing well. This can occur regardless of the actual level of prejudice in a classroom or test-taking situation.

Stereotype threat is distinct from the vague intuition of teachers, coaches, or parents who have seen their kids "choke" at an important event. It is a cognitive phenomenon that has been painstakingly researched, documented, and quantified over the past two decades in hundreds of peer-reviewed studies. (For an engaging summary of this research, see C.M. Steele, *Whistling Vivaldi: How Stereotypes Affect Us and What We Can Do* (Norton, 2010).)

Though all people are potentially susceptible to stereotype threat, the fact that negative stereotypes are distributed unequally in the world means that stereotype threat does not strike all students equally. It operates systematically against groups that are stereotyped as intellectually inferior. For example, the stereotype of black intellectual inferiority has long been embedded in American culture, and many black students are keenly aware of it. Latino students often experience the same stereotype. Women are often stereotyped as less able in math and science. These stereotypes have the effect of depressing the average grades and test scores of black and Latino students, and they have the same effect for women in math and science.

Scientists have also found that these negative effects can be mitigated by changing aspects of the academic environment that cue stereotype threat. In fact, research on this phenomenon highlights the often hidden ways in which educational contexts can bring to mind negative stereotypes that disrupt cognitive processing for students targeted by these stereotypes. Simply taking a test believed to be evaluative of an intellectual ability subject to a negative stereotype can

trigger threat. Moreover, research has established that decreasing the salience of racial identity through diversity is a powerful means of decreasing stereotype threat, which is crucial to student performance in class and on tests. When students perform in settings that are diverse, they are less likely to feel undue pressure to represent their group. That frees them to focus and succeed.

These findings have three important implications for college admissions.

First, because intellectual stereotypes and thus stereotype threat are ubiquitous, standardized test scores and high school GPAs systematically underestimate the true talents and potential for success of many members of minority groups stigmatized as intellectually inferior. All students face challenges that can prevent them from performing at their best. However, an additional burden falls systematically on students of color and women in math and science. This burden causes their scores to underestimate their intellectual potential relative to other students. A genuine merit-based admissions policy therefore cannot rely on these numbers alone. An admissions policy that takes proper account of stereotype threat is not a *departure* from merit-based admissions. It instead ensures *more accurate* merit-based admissions.

Second, stereotype threat in college may depress the classroom performance and grades of minority students. In turn, this may frustrate the objectives of diversity, such as enhanced classroom dialogue, and inhibit minority students from contributing their full potential to the university's academic environment.

Third, research on *latent capacity* establishes that in contexts in which stereotype threat is reduced, students from minority groups subject to threat show dramatic improvements in performance. For example, a single exercise designed to quell worries about belonging in college that can arise from negative stereotypes raised black students' grades and reduced the black-white achievement gap by half over the next three years. G.M. Walton and G.L. Cohen, "A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students," 331 *Science* 1447, 1447–49 (2011).

The purpose of this brief is to acquaint the Court with the research on stereotype threat and to explain its relevance to college admissions policies. The first section of the brief summarizes the research findings. The second section discusses how these findings bear on the questions of how to admit the best students and how to ensure that those who are admitted perform up to their capacities.

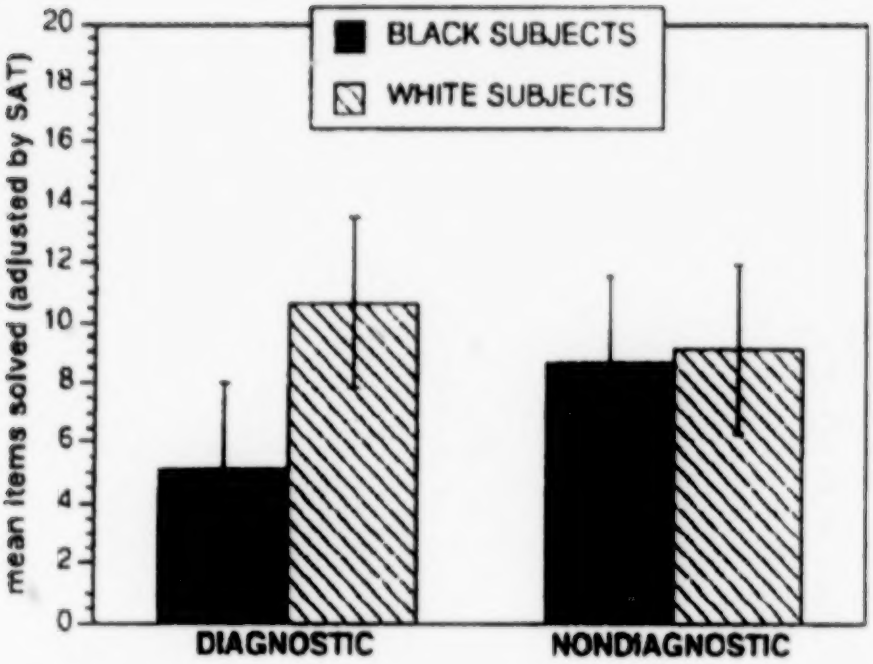
I. The Stereotype Threat Research

In 2008, a review of the large body of research on stereotype threat concluded that "[s]tereotype threat has become one of the most widely studied topics of the past decade in social psychology." The review explained that "a large body of work now testifies to the reliability and generalizability of stereotype threat effects on performance." T. Schmader et al., "An Integrated Process Model of Stereotype Threat Effects on Performance," 115 *Psychological Review* 336, 336 (2008).

As with most research on social-cognitive phenomena, the early findings of stereotype threat came from laboratory experiments. More recent work has confirmed the existence of stereotype threat in the real world.

A. Stereotype Threat in the Laboratory

Psychologists Claude Steele and Joshua Aronson conducted a well-known early study of stereotype threat in an effort to understand the racial achievement gap. Steele and Aronson administered the same test, composed primarily of problems from the GRE, to black and white Stanford students under two different conditions. In the "threat" condition, the students were told that the test was diagnostic of their intellectual ability, an instruction that activated a negative stereotype of intellectual inferiority. By contrast, in the "no threat" condition, the test was characterized as a mere problem-solving task that was not intended to evaluate their intellectual ability. Under the "threat" condition, black students performed substantially worse than white students with the same incoming SAT scores. But under the "no threat" condition, black students' performance improved significantly, virtually eliminating the racial gap between black and white students with the same incoming SAT scores. C.M. Steele and J. Aronson, "Stereotype Threat and the Intellectual Test Performance of African Americans," 69 *Journal of Personality and Social Psychology* 797 (1995).



The graph above is reproduced from the Steele-Aronson study. *Id.* at 802 (figure 2). The two bars on the left show the extent to which white students outperformed black students under the "threat" condition. The two bars on the right show that this gap was nearly eliminated under the "no threat" condition.

Steele and Aronson concluded that when the test was represented as evaluative of ability, which is how most tests are represented and understood, the black students became anxious that a poor performance could seem to confirm the negative stereotype of intellectual inferiority, an anxiety that disrupted their test performance. But when the test was characterized in the "no threat" condition as non-evaluative, the instructions made negative intellectual stereotypes less relevant. With less burden of psychological threat, black students' performance improved dramatically. A

great deal of subsequent research, over a wide range of populations and testing conditions, has reached the same conclusion. *See, e.g.*, R.P. Brown and E.A. Day, "The Difference Isn't Black and White: Stereotype Threat and the Race Gap on Raven's Advanced Progressive Matrices," 91 *Journal of Applied Psychology* 979 (2006).

Similar experiments conducted concurrently at the University of Michigan yielded identical results. There, equally qualified men and women took a math test. In the "threat" condition, participants were first told that men performed better than women at math. In the "no threat" condition, participants were first told that men and women performed equally on the test. This seemingly small difference in instructions yielded sharply different results. In the former condition, the women performed substantially worse than the men; in the latter, men and women performed equally well. S.J. Spencer et al., "Stereotype Threat and Women's Math Performance," 35 *Journal of Experimental Social Psychology* 4 (1999). Subsequent research has confirmed that merely describing a math test as evaluative of math ability can trigger stereotype threat and undermine women's performance. D.M. Quinn and S.J. Spencer, "The Interference of Stereotype Threat with Women's Generation of Mathematical Problem-Solving Strategies," 57 *Journal of Social Issues* 55 (2001); P.G. Davies et al., "Consuming Images: How Television Commercials that Elicit Stereotype Threat Can Restrain Women Academically and Professionally," 28 *Personality and Social Psychology Bulletin* 1615, 1618 (2002).

Such findings – of very different test scores from the exact same pool of individuals simply because of subtle changes in the situation – have now been replicated in hundreds of studies. For example, when Latino college students were told that a math test would evaluate their intellectual ability, they scored much lower than white students. But when they were told that the test *did not* evaluate their ability, they performed as well as white students. P.M. Gonzales et al., "The Effects of Stereotype Threat and Double-Minority Status on the Test Performance of Latino Women," 28 *Personality and Social Psychology Bulletin* 659 (2002). In the rare circumstances in which majority-group members face negative stereotypes, they too show stereotype threat. When white male students at Stanford University specifically selected for high math ability were given a math test and told that the goal of the experiment was to examine why Asians outperform whites in math, their scores plummeted. J. Aronson et al., "When White Men Can't Do Math: Necessary and Sufficient Factors in Stereotype Threat," 35 *Journal of Experimental Social Psychology* 29 (1999).

Why does stereotype threat have such striking effects? When people are aware of the stereotype, their attention is split between the test at hand and worries about being seen stereotypically. Research finds that anxiety about negative stereotypes can trigger physiological changes in the body and the brain (especially an increased cardiovascular profile of threat and activation of brain regions used in emotion regulation), cognitive reactions (especially a vigilant self-monitoring of performance), and affective responses (especially the suppression of self-doubts). These effects all divert cognitive resources that could

otherwise be used to maximize task performance. T. Schmader et al., "An Integrated Process Model," 342-46; T. Schmader and M. Johns, "Converging Evidence that Stereotype Threat Reduces Working Memory Capacity," 85 *Journal of Personality and Social Psychology* 440 (2003). As a recent review of this research concludes, "[t]his pattern of evidence suggests that stereotype threat degrades the ability to regulate attention during complex tasks," because of the need to "inhibit thoughts, feelings, and behaviors counterproductive to one's current goals." T. Schmader et al., "An Integrated Process Model," 340. Because students under stereotype threat are automatically managing this anxiety, they may not admit it to others or even be aware of it themselves. *Id.* at 345. And because the students who care the most about their academic performance are the most likely to experience this anxiety, stereotype threat hits the most dedicated students the hardest. It is not their motivation to succeed that falters; what falters is their ability to maintain undivided attention.

B. Stereotype Threat in the Real World

More recent work has provided evidence that the effects shown in the laboratory also exist in the real world. J. Aronson and T. Dee, "Stereotype Threat in the Real World," in M. Inzlicht and T. Schmader, eds., *Stereotype Threat: Theory, Process, and Application* 264–79 (Oxford University Press, 2012); G.M. Walton et al., "Affirmative Meritocracy," *Social Issues and Policy Review*, 1–35 (2013).

Stereotype threat influences performance in academic environments as early as middle school. One intervention, rooted in basic psychological research,

lifts the threat by providing students an opportunity to write about personal values in an in-class exercise. That helps students feel that they are seen as more than a token of a negatively stereotyped group. This intervention has reduced the gap between the GPAs of black and white middle school students by 40%. G.L. Cohen et al., "Reducing the Racial Achievement Gap: A Social-Psychological Intervention," 313 *Science* 1307 (2006). *See also* C. Good et al., "Improving Adolescents' Standardized Test Performance: An Intervention to Reduce the Effects of Stereotype Threat," 24 *Journal of Applied Developmental Psychology* 645 (2003); G.L. Cohen et al., "Recursive Processes in Self-Affirmation: Intervening to Close the Minority Achievement Gap," 324 *Science* 400 (2009). This intervention was successfully replicated in a study that also included Latino middle school students. Sherman, D. et al., "Deflecting the trajectory and changing the narrative: How self-affirmation affects academic performance and motivation under identity threat," *Journal of Personality and Social Psychology*, 591–618 (2013).

Stereotype threat has also been found to exist in high school. For example, the California high school exit exam must be passed in order to graduate; for those who find this exam challenging, it is an extremely high-stakes test that is more likely to evoke stereotype threat. By contrast, California achievement tests, although they test similar material, have much lower stakes because they have no direct impact on the student. The achievement tests are thus less likely to trigger stereotype threat. Black and Latino students who performed as well as white students on the achievement tests (the "low threat" condition) performed markedly worse on the exit exam (the "high

threat" condition). In math, girls who performed as well as boys on the achievement tests ("low threat") performed substantially worse on the exit exam ("high threat"). S.F. Reardon et al., *Effects of the California High School Exit Exam on Student Persistence, Achievement, and Graduation* (Stanford University Institute for Research on Education Policy and Practice Working Paper 2009–12 (2009)).

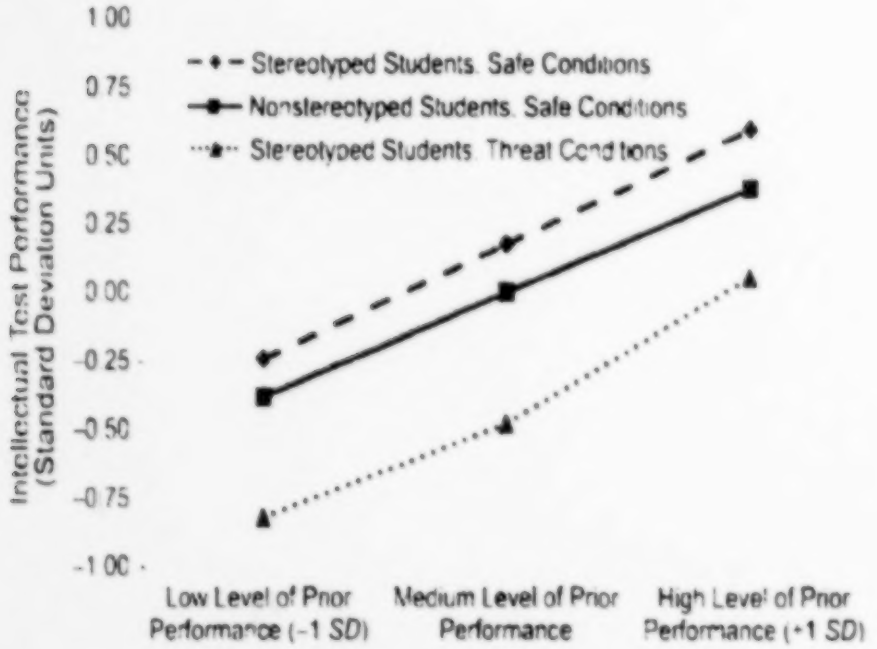
Stereotype threat has been measured most often in college. At the Air Force Academy, where students are randomly assigned to professors for mandatory standardized courses, female students do much better in math and science courses taught by women, a setting that implicitly negates the stereotype that women are bad at math. The difference in performance is most pronounced for the female students who are most skilled at math. S.E. Carrell et al., "Sex and Science: How Professor Gender Perpetuates the Gender Gap," 125 *Quarterly Journal of Economics* 1101 (2010); *see also* J.G. Stout et al., "STEMing the Tide: Using Ingroup Experts to Inoculate Women's Self-Concept in Science, Technology, Engineering, and Mathematics (STEM)," 100 *Journal of Personality and Social Psychology* 255 (2011). At another selective college, the GPA gap between black and white students was cut in half over three years by an intervention that mitigated worries about belonging that arise from negative stereotypes. This intervention conveyed to first-year students that many students worry at first about whether they belong in college, but that this gets better with time. This helps students who face negative stereotypes see those worries are normal, and not as evidence that "People like me do not belong," thus keeping them motivated even when they face the

inevitable challenges of college. G.M. Walton and G.L. Cohen, "A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students," 331 *Science* 1447 (2011); *see also* J. Aronson et al., "Reducing the Effects of Stereotype Threat on African American College Students by Shaping Theories of Intelligence," 38 *Journal of Experimental Social Psychology* 113 (2002).

To see whether real-world measures of academic merit are distorted by stereotype threat, many researchers have studied group differences when the threat is reduced. In these circumstances, do students who face stereotype threat outperform other students with the same real-world grades and test scores? A recent meta-analysis statistically combined 39 independent samples with more than three thousand total participants to examine the effects of reducing stereotype threat through laboratory manipulations. It found that standard measures of academic performance underestimate the capacity of students targeted by negative stereotypes by an average of 0.18 standard deviations. G.M. Walton and S.J. Spencer, "Latent Ability: Grades and Test Scores Systematically Underestimate the Intellectual Ability of Negatively Stereotyped Students," 20 *Psychological Science* 1132, 1135 (2009). To put that figure in context, one standard deviation on this past year's 2400-point SAT was 351 points. College Board, *2015 College-Bound Seniors: Total Group Profile Report* 1 (2015). To have one's score reduced by 0.18 standard deviations would thus cost a student 63 points on the SAT.

A second meta-analysis combined the results of randomized field experiments on a total of more than

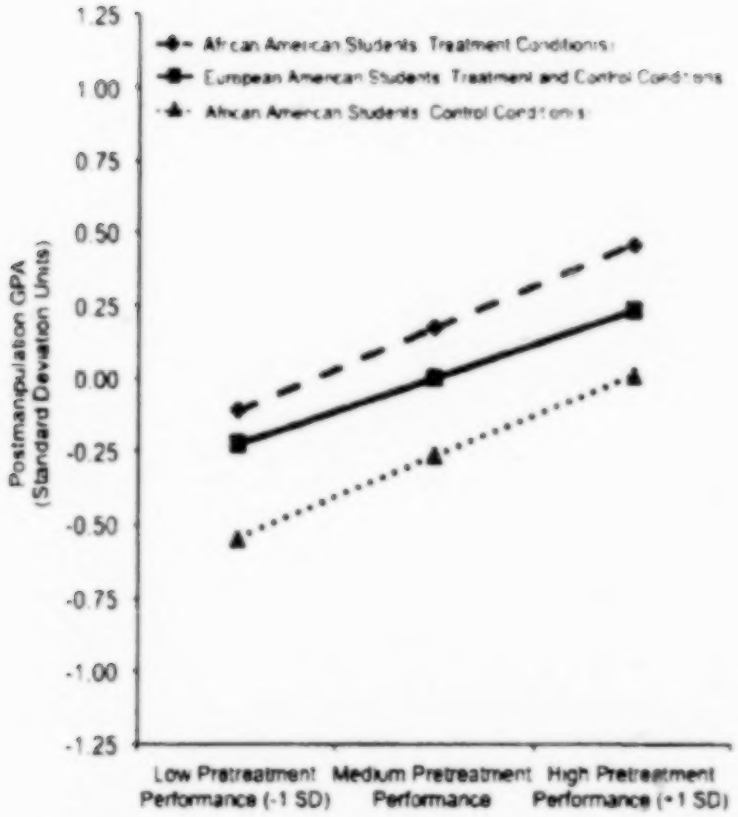
fifteen thousand students in which interventions reduced stereotype threat in the real world rather than in the laboratory. The results were remarkably similar: conventional measures of academic performance underestimated the ability of members of stereotyped groups by 0.17 standard deviations. Walton and Spencer, "Latent Ability," 1137.



The graph above represents the first meta-analysis, the one showing the effects of laboratory interventions to reduce stereotype threat. Walton and Spencer, "Latent Ability," 1135 (figure 1). It shows the difference in academic performance between stereotyped students and non-stereotyped students who have equal levels of prior performance, as measured by past grades and test scores. The data were aligned such that the prior performance was at the exact same level for all three groups. The gap between the top dashed line and the middle solid line

shows that those measures of prior performance were biased by stereotype threat, because the stereotyped students perform *better* than the non-stereotyped students once the threat is reduced.

A useful analogy is to think of stereotype threat as a headwind. Imagine a competition in which Runner 1 faces a headwind but Runner 2 does not. If the runners nevertheless tie in those conditions, we would expect Runner 1 to win a new race when the headwind is reduced. That is precisely what the data show. The size of this gap – 0.18 standard deviations, or 63 points on the SAT – is the size of the average headwind confronting stereotyped students. It shows the extent to which prior grades and test scores underestimated the true ability of stereotyped students, on average. These effects can be greater in settings with higher stakes, more difficult material, or a less favorable representation of one's group – all situations where the level of stereotype threat is likely to be higher.



The graph above represents the second meta-analysis, the one showing the effects of real-world interventions to reduce stereotype threat. *Id.* at 1138 (figure 2d). The gap between the top dashed line and the middle solid line again shows that when the headwind is reduced, stereotyped students perform better than non-stereotyped students who had the same incoming scores.

It is also worth focusing on the gap between the middle solid line and the bottom dotted line, which shows the converse effect of *underperformance*. Often stereotyped students perform worse than non-stereotyped students at a subsequent stage of education, even though they have the same incoming

scores. One reason is that stereotype threat increases as academic work becomes more difficult – the headwind blows harder. If the two runners tie when Runner 1 faces a moderate headwind, we would expect Runner 1 to lose in a subsequent race with a stiffer headwind. Again, this is what the data show. Even with identical incoming scores, the non-stereotyped students outperform the stereotyped students.

This disparity is not inevitable. It is not the consequence of the inherent capacities of students; rather, it is the consequence of the educational environment. When that environment changes, so does student performance. The large gap between the top dashed line and the bottom dotted line in both graphs represents the dramatic difference between a context in which stereotype threat is alleviated (the headwind weakens) and a context in which stereotype threat is exacerbated (the headwind stiffens).

These findings yield two simple conclusions. First, if grades and test scores are used as the sole basis for admissions, the admissions process will systematically underestimate the ability of minority students by approximately two-tenths of a standard deviation. Because of the reality of stereotype threat, grades and test scores are not unbiased measures of talent.

Second, educational institutions can take steps to mitigate the threat that commonly exists in academic contexts. As we will show, an important way to do so is through ensuring an adequate representation of diverse groups.

II. Implications for College Admissions

These research findings have three principal implications for college admissions. First, if a college wishes to admit the students with the greatest academic potential, it cannot rely solely on standardized test scores and high school GPAs, because these numbers, on a group level, have been distorted by stereotype threat. Second, if a college wishes to ensure that its admitted students perform in the classroom and on tests to their full capacities, it must take steps to counter stereotype threat. One such step is to enroll enough minority students to ensure that in the relevant learning environment students do not feel themselves merely as representatives of their race. Third, at schools that create learning environments conducive to all of their students, black and Latino students will not only succeed but will also predictably close gaps in performance vis-à-vis their white peers.

A. Admitting the Best Students

Stereotype threat research reinforces what colleges already know – standardized tests and high school grades are useful but imperfect predictors of college success. Thus, even if the goal of admissions is construed narrowly as selecting those students who are most likely to succeed academically, many colleges have always looked beyond the numbers to assess the whole person. Stereotype threat, from the perspective of an admissions officer, provides just one more reason not to use a rigid numbers-only admissions policy.

Admissions officers routinely admit students with lower grades or standardized test scores than others they do not admit, for reasons that are well known and

widely accepted. Some applicants have jobs while in high school and thus do not have as much time to study as students who can afford not to work. Some devote comparable amounts of time to sports, or to volunteer work, or to caring for sick family members. Some applicants cannot afford elaborate test preparation courses. Others have grown up in crime- and poverty-ridden neighborhoods that are not conducive to educational achievement. Grades and standardized test scores may underestimate the true talents of such students and their potential for academic success in college, so selective colleges do not rely solely on the numbers.

Research on stereotype threat further demonstrates that the most promising students are not always the ones with the highest SAT scores or the best high school grades. In fact, in the case of stereotype threat this factor functions on a group level. It causes these measures to systematically underestimate the ability of members of stereotyped groups. It is thus important for a college that seeks to admit the students with the greatest potential, not just those with the highest numbers, to take stereotype threat into account. In doing so, colleges can use the same holistic method they use to take other factors into account. Just as colleges do not give mechanical preferences to applicants with full-time jobs or applicants who care for their grandparents, colleges need not use mechanical preferences to account for stereotype threat.

When colleges appropriately account for stereotype threat, the result may be a freshman class in which the average SAT score of minority students is lower than

the average SAT score of white students. The research suggests, however, that this outcome is a step toward meritocracy, not a departure from it. S. Erman and G. Walton, "Stereotype Threat and Antidiscrimination Law: Affirmative Steps to Promote Meritocracy and Racial Equality in Education," 88 *Calif. L. Rev.* 307 (215); J. Kang and M.R. Banaji, "Fair Measures: A Behavioral Realist Revision of Affirmative Action," 94 *Calif. L. Rev.* 1063 (2006). The freshman class would consist of the best students regardless of race.

B. Ensuring That Admitted Students Can Perform up to Their Capacities

Stereotype threat in college depresses the performance of many minority students. The more a student experiences stereotype threat, the worse the student's grades, even controlling for the student's baseline level of academic preparation. J. Owens and D.S. Massey, "Stereotype Threat and College Academic Performance: A Latent Variables Approach," 40 *Social Science Research* 150 (2011); M.J. Fischer, "A Longitudinal Examination of the Role of Stereotype Threat and Racial Climate on College Outcomes for Minorities at Elite Institutions," 13 *Social Psychology of Education* 19 (2010); D.S. Massey and L. Probasco, "Divergent Streams: Race-Gender Achievement Gaps at Selective Colleges and Universities," 7 *Du Bois Review* 219 (2010); R.P. Brown and M.N. Lee, "Stigma Consciousness and the Race Gap in College Academic Achievement," 4 *Self and Identity* 149 (2005); R. Mendoza-Denton et al., "Sensitivity to Status-Based Rejection: Implications for African American Students' College Experience," 83 *Journal of Personality and Social Psychology* 896 (2002).

There has accordingly been considerable interest in discovering methods to mitigate stereotype threat in college. One crucial factor is the extent to which students experience "solo status" – when they are the only representative, or one of few representatives, of their group. In one experiment, black undergraduates who took a test as the only black member of a group performed worse than equally qualified black undergraduates who took the same test as members of an all-black group. D. Sekaquaptewa and M. Thompson, "The Differential Effects of Solo Status on Members of High- and Low-Status Groups," 28 *Personality and Social Psychology Bulletin* 694 (2002). In a similar experiment, female undergraduates did better on a math test when they took the test as part of a group in which they were not the only woman. M. Inzlicht and T. Ben-Zeev, "A Threatening Intellectual Environment: Why Females are Susceptible to Experiencing Problem-Solving Deficits in the Presence of Males," 11 *Psychological Science* 365 (2000). *See generally* N. Dasgupta, "Ingroup Experts and Peers as Social Vaccines Who Inoculate the Self-Concept: The Stereotype Inoculation Model," 22 *Psychological Inquiry* 231 (2011); M. Thompson and D. Sekaquaptewa, "When Being Different is Detrimental: Solo Status and the Performance of Women and Racial Minorities," 2 *Analyses of Social Issues and Public Policy* 183 (2002). Female peers in small work groups enhance women's motivation, verbal participation, and career aspirations in engineering. *Proceedings of the National Academy of Sciences*, accessed online from http://www.pnas.org/content/early/2015/04/03/1422822112.

Numerous field studies have likewise found that the academic performance of women and minority students improves in more diverse settings. *See, e.g.*, E. Spangler et al., "Token Women: An Empirical Test of Kanter's Hypothesis," 84 *American Journal of Sociology* 160 (1978); L. Springer et al., "Effects of Small-Group Learning on Undergraduates in Science, Mathematics, Engineering, and Technology: A Meta-Analysis," 69 *Review of Educational Research* 21, 34 (1999); E. Harskamp et al., "Group Composition and Its Effect on Female and Male Problem-Solving in Science Education," 50 *Educational Research* 307 (2008); N. Ding and E. Harskamp, "How Partner Gender Influences Female Students' Problem Solving in Physics Education," 15 *Journal of Science Education and Technology* 331 (2006).

These studies suggest that being underrepresented, and especially being severely underrepresented, creates psychological threat and amplifies a student's worry that his or her performance will be seen as reflecting the capacity of his or her group. Walton et al., "Affirmative Meritocracy," 19; V. Purdie-Vaughns et al., "Social Identity Contingencies: How Diversity Cues Signal Threat or Safety for African Americans in Mainstream Institutions," 94 *Journal of Personality and Social Psychology* 615 (2008); M.C. Murphy et al., "Signaling Threat: How Situational Cues Affect Women in Math, Science, and Engineering Settings," 18 *Psychological Science* 879 (2007). When you are one of only a few members of a racial or gender group, your group identity tends to define you in that setting, both in terms of how you think about yourself and how you are perceived by others. W.J. McGuire et al., "Salience of Ethnicity in the Spontaneous Self-Concept as a

Function of One's Ethnic Distinctiveness in the Social Environment," 36 *Journal of Personality and Social Psychology* 511 (1978). When *A* is the only black student taking Medieval Literature, he is likely to feel like, and to be perceived as, "the black kid" in the class. When *B* is the only woman majoring in Mechanical Engineering, she is likely to feel like, and to be perceived as, not just an Engineering major, but a *woman* majoring in Engineering. But when there are multiple members of one's racial or gender group present, a person's identity is less defined by group membership. Now *A* is just a student taking Medieval Literature and *B* is just someone studying Engineering. Stereotype threat diminishes in diverse environments, because group membership tends to become less defining of individual identity.[2]

If a college wishes to ensure that equally qualified white and minority students can perform up to their capacities, this research indicates that one prudent strategy is to admit a diverse class. Such diversity can make it easier to construct learning environments that

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[2] Justice O'Connor tells a story that illustrates this point. She explains that the appointment of Justice Ginsburg "made an enormous difference for her experience. When I'd arrived there had been a large amount of media attention to the selection of a woman and then to see what that woman did, under all circumstances. And too much attention for any reasonable comfort level. And the minute Justice Ginsburg came to the court, we were nine justices. It wasn't seven and then 'the women.' We became nine. It was a great relief to me." This quotation is from a 2003 CNN interview entitled "Sandra Day O'Connor: 'The Majesty of the Law.'" available at http://articles.cnn.com/2003-05-20/politics/judy.page.oconnor_1_individual-rights-supreme-court-justice-sandra-day-o-connor/3?_s=PM:ALLPOLITICS.

mitigate stereotype threat triggered by severe underrepresentation.

An important question is whether the relevant learning environment is the entire university, the college, the major, or even a particular classroom. The research supports the conclusion that general diversity on a college campus is insufficient to address the threat that may occur within particular fields or classrooms. Walton et al., "Affirmative Meritocracy" at 19; V. Purdie-Vaughns et al., "Social Identity Contingencies: How Diversity Cues Signal Threat or Safety for African Americans in Mainstream Institutions," 94 *Journal of Personality and Social Psychology* 615 (2008); M.C. Murphy et al., "Signaling Threat: How Situational Cues Affect Women in Math, Science, and Engineering Settings," 18 *Psychological Science* 879 (2007). For example, in a study of women's experience in engineering, women were threatened along diverse outcomes (negative reports of daily experiences, poor grades) in male dominated engineering majors (<20%, average of 10%) but were successful in more gender diverse majors (>20%, average of 33%). G.M. Walton et al., "Two brief interventions to mitigate a "chilly" climate transform women's experience, relationships, and achievement in engineering," *Journal of Educational Psychology*, 468–485 (2015).

We recognize that not every classroom and lab can be diverse. But university administrators can and will target the largest pressing and solvable problems. And the more diverse an entering class, the more likely that the most important relevant learning environments can be relieved of stereotype threat. When that threat is lifted, the performance gap between white and minority

students will diminish. Minority students' performance will be more commensurate with their talents.

Amici are engaged in extensive research with different universities to identify interventions in addition to greater representation of diverse classrooms to mitigate stereotype threat at the college level. (e.g., "The College Transition Collaborative," https://www.perts.net/ctc) Indeed, the University of Texas has been a leading participant and since 2012, the University has been engaged in a study of how best to address the differential rates of successful full-time completion of first year of college between "advantaged" and "disadvantaged" students through a set of ever-more sophisticated online exercises to matriculating freshmen.

Researchers identified "disadvantage" using analyses of historical data from the University of Texas to identify which groups experienced stereotype threat and lower graduation rates. They found that black, Hispanic/Latino, and first-generation college students experienced these conditions. Groups with high historical graduation rates and who are not subjected to negative societal stereotypes about their abilities were considered "advantaged" (continuing-generation European American and Asian American students; throughout, "advantaged").

The study assessed the efficacy of two strategies to reduce the effects of stereotype threat: the *social belonging* intervention described earlier, which addresses worries about whether "People like me belong" in college, and a *growth mindset of intelligence* intervention. The growth mindset intervention

discourages the inference that, when schoolwork is hard, it means, "I can't do it." Students who face negative intellectual stereotypes may be especially at risk for this inference. In the intervention, students learn neuroscientific evidence that intelligence is not fixed, but rather that the brain is like a muscle and can be developed with hard work.

In the first year of the program, the interventions were delivered on a randomized basis to evaluate their causal effects. In a subsequent year, all incoming students participated in the exercises. The intervention had the effect of significantly decreasing the gap in full-time enrollment between disadvantaged students and advantaged students. Without the exercise, the gap ranged from 7 to 9%, depending upon the year. With the exercise, the gap fell to between 4 and 6%, a drop of one third or more. These figures indicate that minority and first-generation students admitted to the University of Texas at Austin do not lack the ability that disparities in graduation rates might otherwise suggest. When stereotype threat is reduced, their performance sharply improves.

Yet an essential aspect of the University's efforts to reduce stereotype threat is the effort to remedy the experience of racial isolation and tokenism that renews and amplifies stereotype threat. Thus it is important to complement these strategies with mechanisms to promote diversity in college classes.

In short, because of the phenomenon of stereotype threat, a college will have to take race into account if it wishes to admit the best students and to ensure that all students perform as well as they are capable.

Amici are social scientists, not lawyers. It is beyond their expertise to say whether any particular affirmative action program is constitutional. But it would seem very strange to them if the Constitution barred colleges from trying to select the best students based on academic merit, or from trying to ensure that students perform up to their capacities. The best scientific evidence available indicates that in order to accomplish these goals, we cannot be uncompromising. Neither careless race consciousness nor absolute colorblindness will achieve the merit we all fundamentally seek.

CONCLUSION

The judgment of the Court of Appeals should be affirmed.

Respectfully submitted,

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